

# Nebraska SARS-CoV-2 Wastewater Surveillance Report

Updated 8/17/2023

## Background

Nebraska DHHS is monitoring SARS-CoV-2 virus in wastewater to better understand COVID-19 across Nebraska. SARS-CoV-2, the virus that causes COVID-19, is shed in feces by infected individuals. Virus concentrations can be measured by testing samples from community wastewater treatment plants (WWTP). This information can give insight into the trends of COVID-19 in communities served by a wastewater treatment plant.

Wastewater surveillance complements traditional COVID-19 surveillance methods. Unlike other types of COVID-19 surveillance, wastewater surveillance does not depend on people having access to healthcare or availability of COVID-19 testing. Wastewater surveillance data may serve as an indicator if the number of people with COVID-19 in a community is increasing or decreasing.

**This project is a collaboration between wastewater utilities across Nebraska, University of Nebraska-Lincoln, University of Nebraska Medical Center College of Public Health, and local public health departments.**

## Participating Sites

Wwtp Name	County	LHD Name	Population Served
Papillion Creek WWTP	Douglas	Douglas	600,000
Missouri River WWTP	Douglas	Douglas	200,000
Theresa Street WWTP	Lancaster	Lincoln/Lancaster	200,000
Northeast WWTP	Lancaster	Lincoln/Lancaster	100,000
York WRF	York	Four Corners	8,000
Auburn WWTP	Nemaha	Southeast	3,800
Fremont WWTP	Dodge	Three Rivers	28,000
Columbus WWTP	Platte	East Central	23,000
Norfolk WWTP	Madison	Elkhorn Logan Valley	27,000
Grand Island WWTP	Hall	Central	52,000
Kearney WWTP	Buffalo	Two Rivers	33,790
Hastings WWTP	Adams	South Heartland	24,692
O'Neill WWTP	Holt	North Central	3,700
North Platte WWTP	Lincoln	West Central	24,000
Scottsbluff WWTP	Scotts Bluff	Panhandle	15,932

## Resources

Learn more about wastewater surveillance in Nebraska:

<https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

COVID-19 in Nebraska: <https://dhhs.ne.gov/Pages/Coronavirus.aspx>



# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Interpreting the Data

Wastewater surveillance is an emerging public health tool. There is evidence that SARS-CoV-2 virus levels in wastewater is correlated with infections in people within a sewershed. A change in wastewater level trends may signal a change in community transmission. However, wastewater data should be used in combination with other COVID-19 data to assess the spread of COVID-19 in the community.

This report shows wastewater virus levels in comparison to COVID-19 case rates. Earlier in the pandemic, wastewater levels were strongly correlated with reported cases. More recently, this relationship has weakened, possibly due to an increase in at-home testing and fewer people seeking clinical testing.

Wastewater virus levels are not directly comparable between wastewater treatments sites. Each community has different populations and sources of wastewater flow. Methods for sampling and laboratory analysis can also differ across sites. The best way to interpret the data is to compare the trends over time in a specific community.

## About the Data

**Concentrations of SARS-CoV-2 in wastewater** are shown as grey dots of virus levels by collection date for each facility. Levels are normalized to adjust for flow rate and population. Levels are also smoothed (spline-fit red line) to aid in trend comparison. They do not indicate a specific or actionable values. Units are reported as virus copies per person. **Note:** As of 05/25/2023, the lab methodology to quantify SARS-COV-2 has been changed from qPCR to dPCR.

**Current virus levels in wastewater** shows whether the most recent virus levels at a site are currently higher or lower than past historical levels at the same site using a percentile. A 'Very Low' percentile (0-20%) means levels are the lowest they have been at the site. A 'Very High' percentile (80-100%) means levels are the highest they have been at the site. This metric only compares measurements at each site and does not compare levels across sites. The percentiles are grouped into the categories:

- Very High: 80-100%
- High: 60-<80%
- Moderate: 40-<60%
- Low: 20-<40%
- Very Low: <20%

**15-day percent change** shows whether virus levels have increased, decreased, or stayed the same over the last 15 days. Percent change is calculated as the modeled change over 15 days, based on a linear regression of virus levels. The categories are grouped into the categories:

- Increasing: >10%
- Stable: 9% to -9%
- Decreasing: <-10%

**Hospitalizations** shows the 7-day average of statewide COVID-19 new hospital admissions.

## Learn more about wastewater surveillance data

CDC COVID-19 Data Tracker, Wastewater Surveillance:

<https://covid.cdc.gov/covid-data-tracker/#wastewater-surveillance>

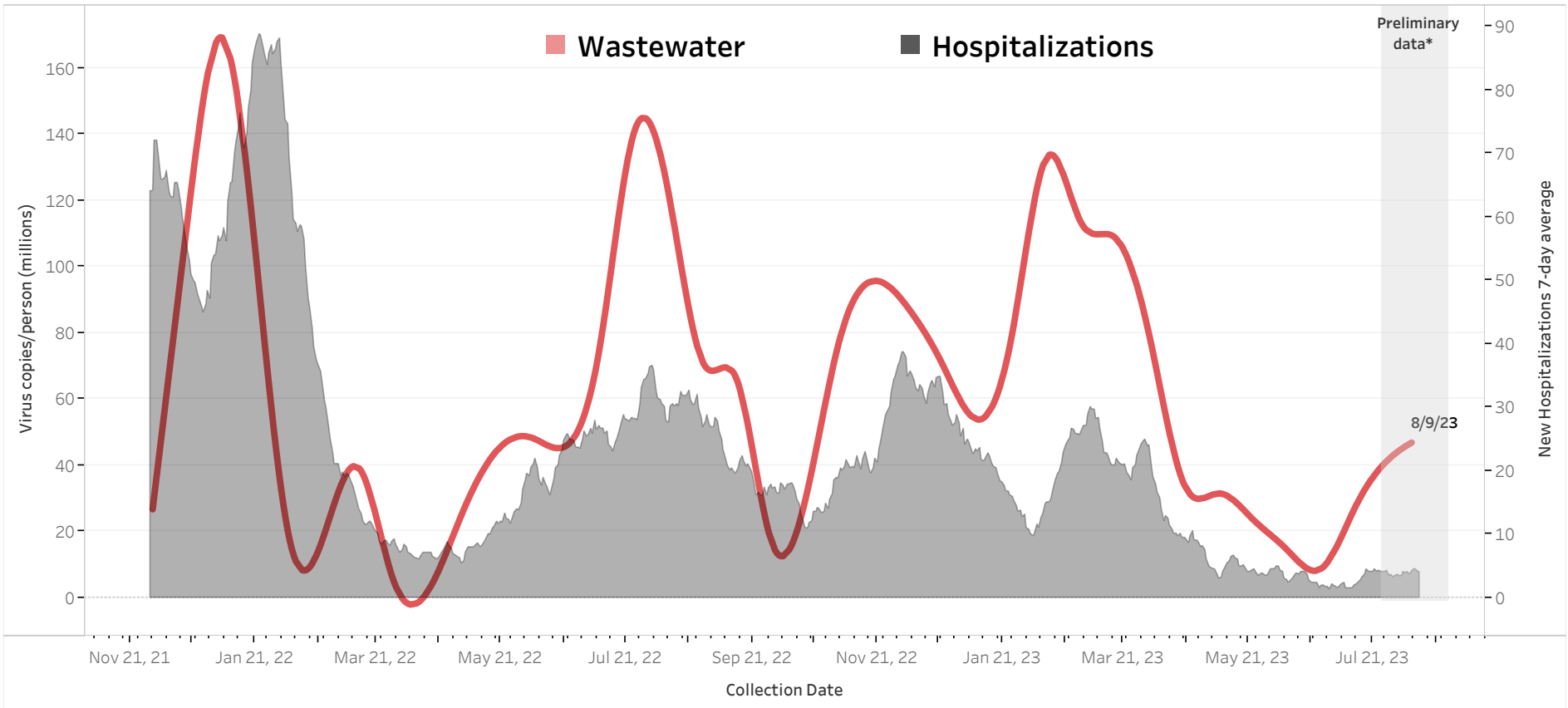
CDC Learn how wastewater surveillance works:

<https://www.cdc.gov/healthywater/surveillance/wastewater-surveillance/wastewater-surveillance.html>

# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Nebraska Statewide SARS-CoV-2 Wastewater Levels and COVID-19 Hospitalizations

Updated 8/17/2023



### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant.

**Wastewater SARS-CoV-2 levels** are shown in red. Levels shown here are smoothed and normalized to adjust for flow rate and population. Wastewater levels are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. **Statewide COVID-19 hospitalizations** are shown in grey. Hospitalizations are 7-day rolling average of new admissions.

\*Wastewater and hospitalizations data for the last two weeks are marked as preliminary. The trends may fluctuate as the data from wastewater sites and hospitals are submitted for the previous two weeks.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Wastewater - Nebraska Wastewater Surveillance System (NeWSS). Hospitalizations - Unified Hospital Data System (formerly HHS protect data);

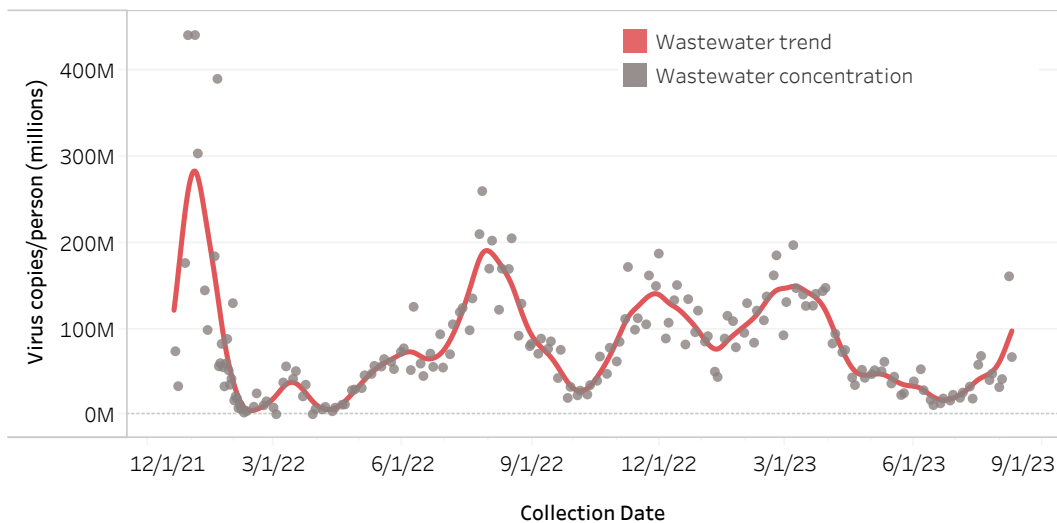
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Eastern Nebraska

### Papillion Creek WWTP

Douglas County (Douglas County Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



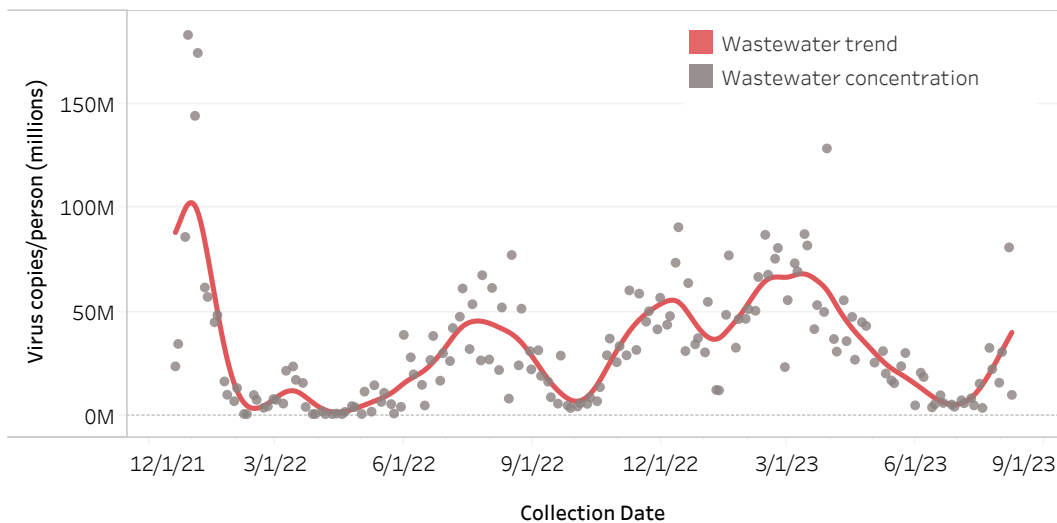
Current virus levels in wastewater  
Moderate  
on 8/9/23

15 day percent change  
Increasing  
from 7/25/23 to 8/9/23

### Missouri River WWTP

Douglas County (Douglas County Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
Low  
on 8/8/23

15 day percent change  
Increasing  
from 7/24/23 to 8/8/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

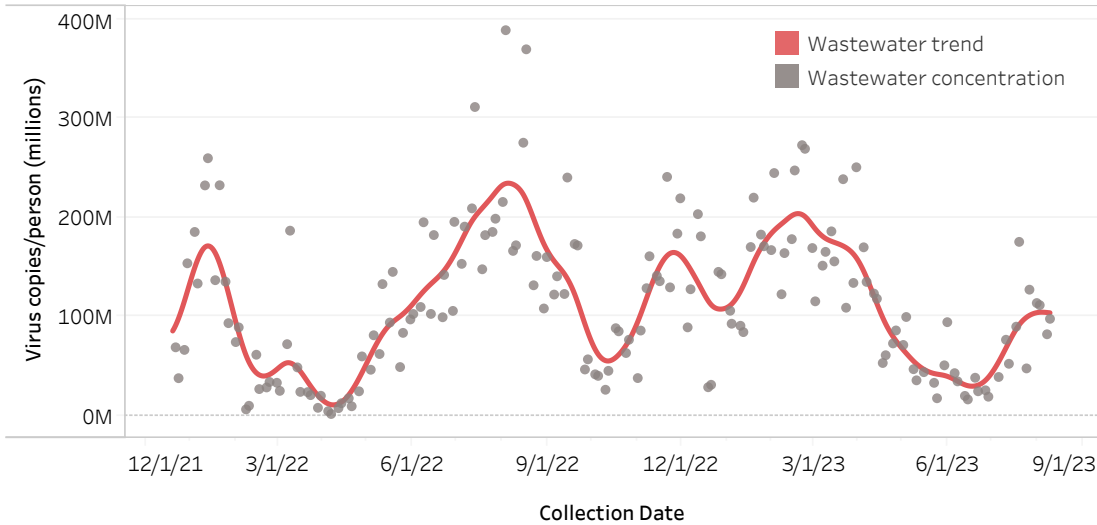
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Southeast Nebraska

### Theresa Street WWTP

Lancaster County (Lincoln Lancaster County Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater

Moderate  
on 8/9/23

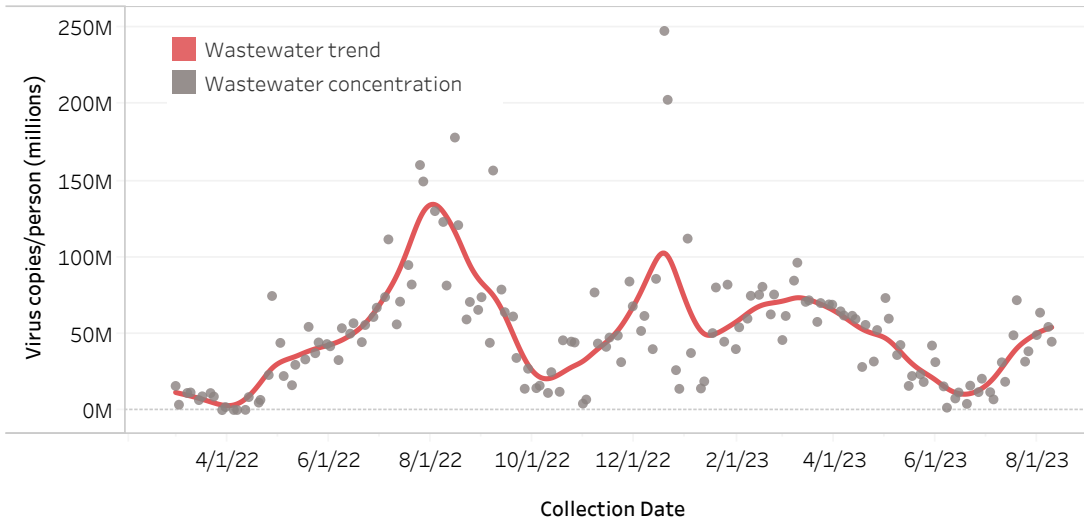
15 day percent change

Decreasing  
from 7/25/23 to 8/9/23

### Northeast WWTP

Lancaster County (Lincoln Lancaster County Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater

Moderate  
on 8/9/23

15 day percent change

Increasing  
from 7/25/23 to 8/9/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

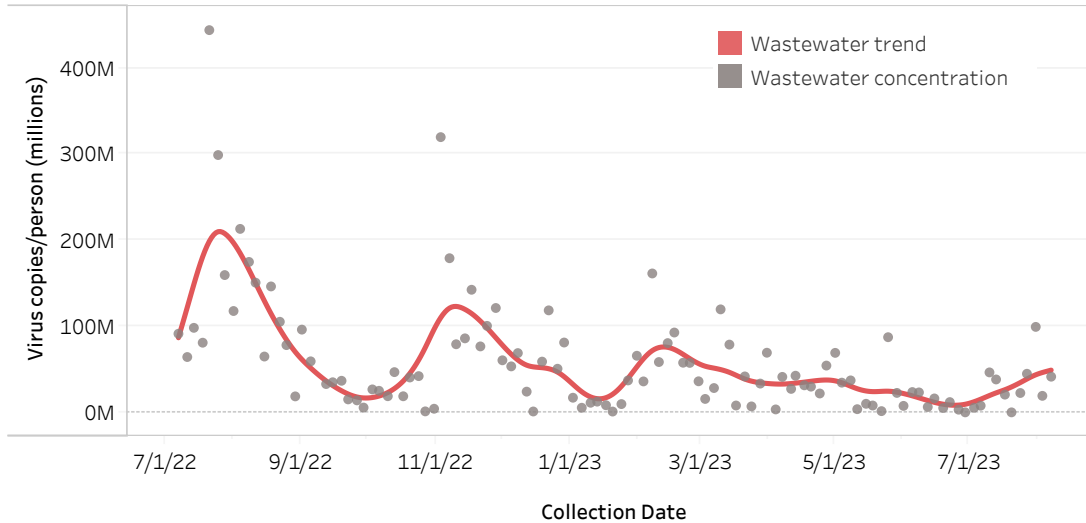
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Southeast Nebraska

### York WRF

York County (Four Corners Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



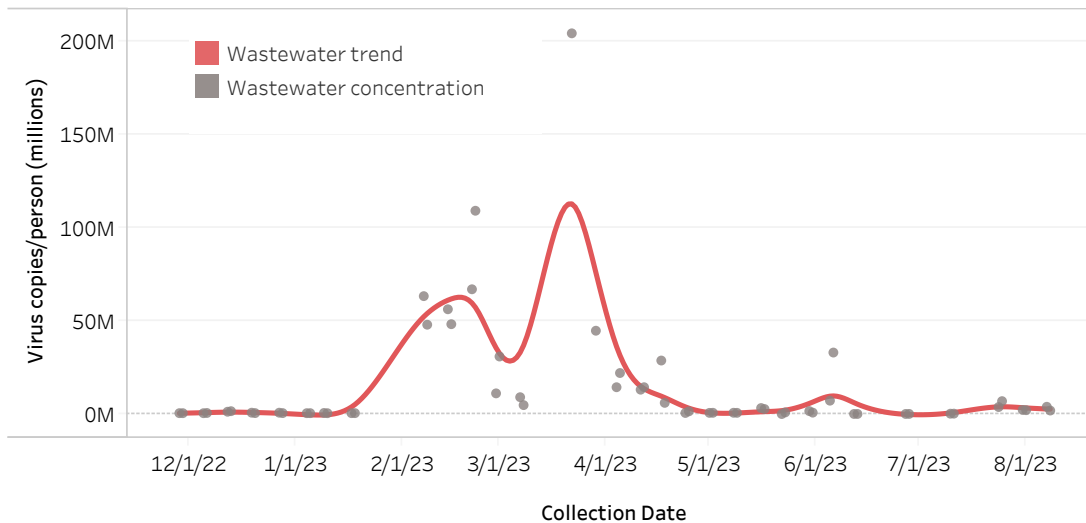
Current virus levels in wastewater  
Moderate  
on 8/7/23

15 day percent change  
Increasing  
from 7/23/23 to 8/7/23

### Auburn WWTP

Nemaha County (Southeast District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
Moderate  
on 8/8/23

15 day percent change  
Decreasing  
from 7/24/23 to 8/8/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

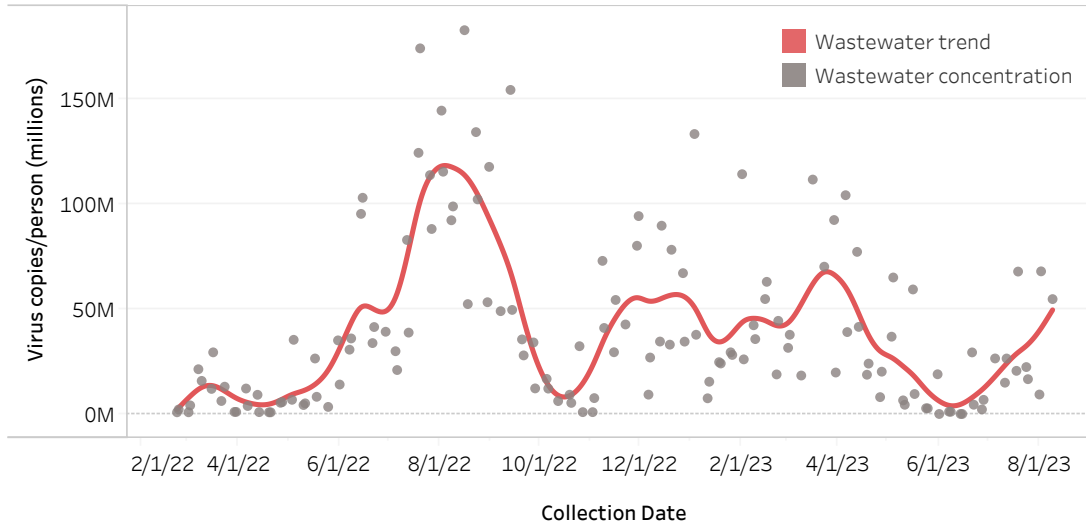
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Northeast Nebraska

### Fremont WWTP

Dodge County (Three Rivers Public Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



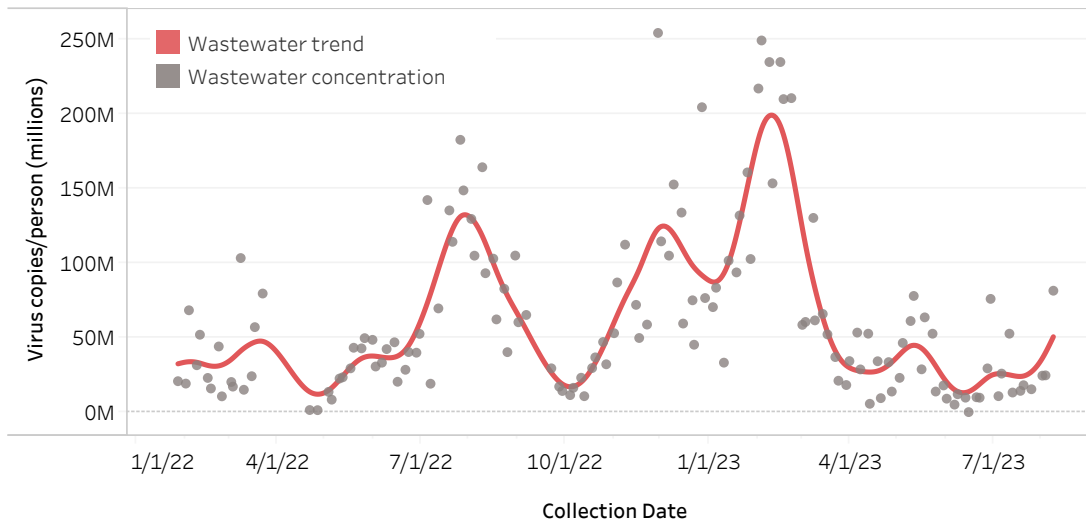
Current virus levels in wastewater  
High  
on 8/9/23

15 day percent change  
Increasing  
from 7/25/23 to 8/9/23

### Columbus WWTP

Platte County (East Central District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
High  
on 8/8/23

15 day percent change  
Increasing  
from 7/24/23 to 8/8/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

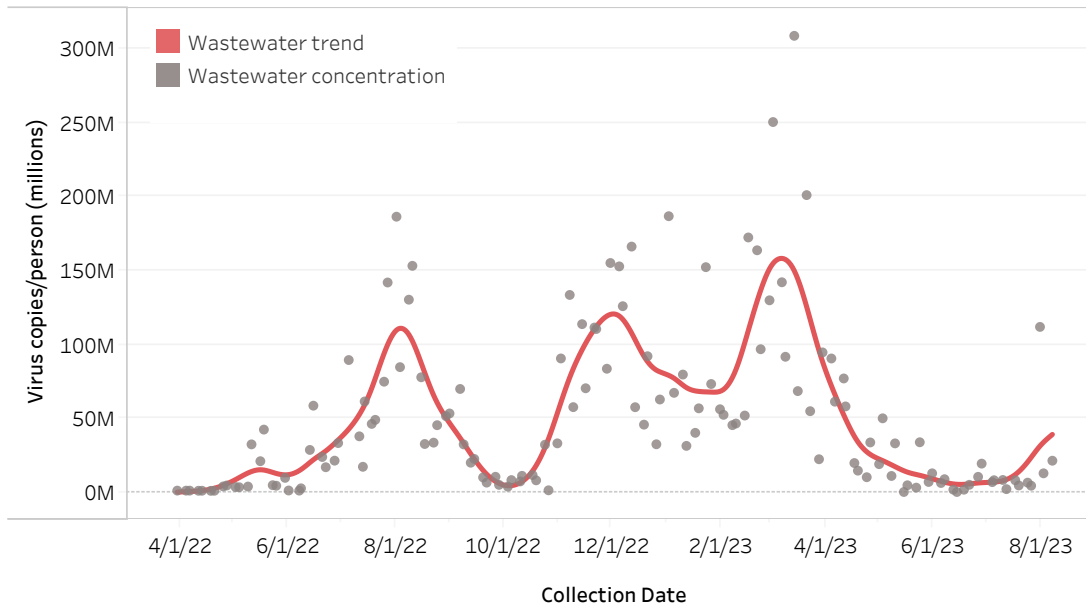
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Northeast Nebraska

### Norfolk WWTP

Madison County (Elkhorn Logan Valley Public Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
Moderate  
on 8/7/23

15 day percent change  
Increasing  
from 7/23/23 to 8/7/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>  
Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).



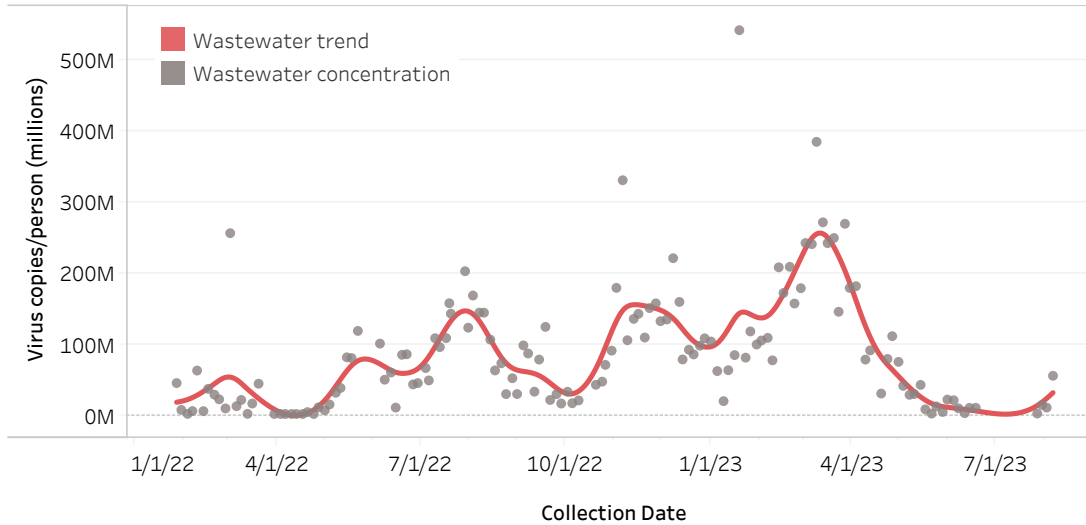
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Central Nebraska

### Grand Island WWTP

Hall County (Central District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



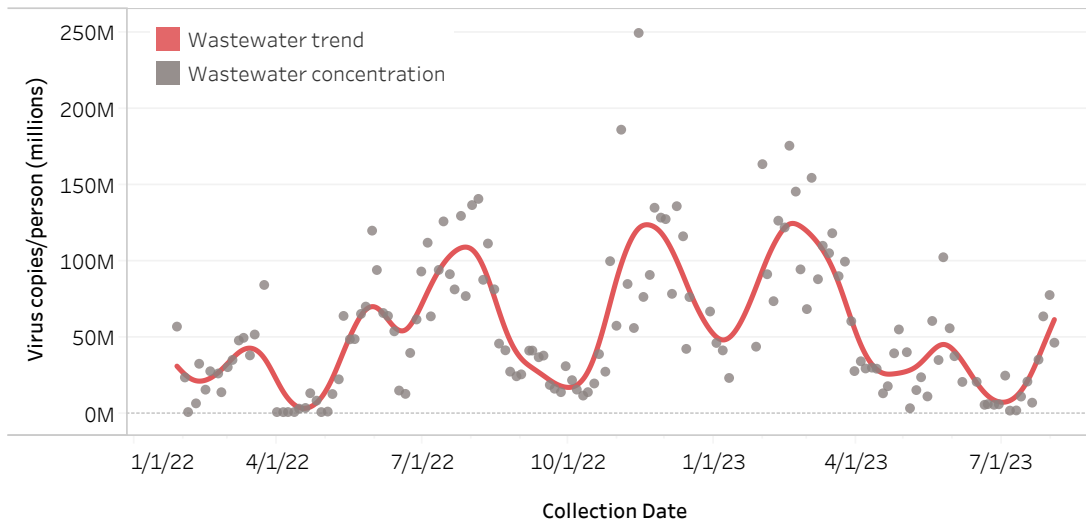
Current virus levels in wastewater  
Moderate  
on 8/6/23

15 day percent change  
Increasing  
from 7/22/23 to 8/6/23

### Kearney WWTP

Buffalo County (Two Rivers Public Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
Moderate  
on 8/3/23

15 day percent change  
Increasing  
from 7/19/23 to 8/3/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

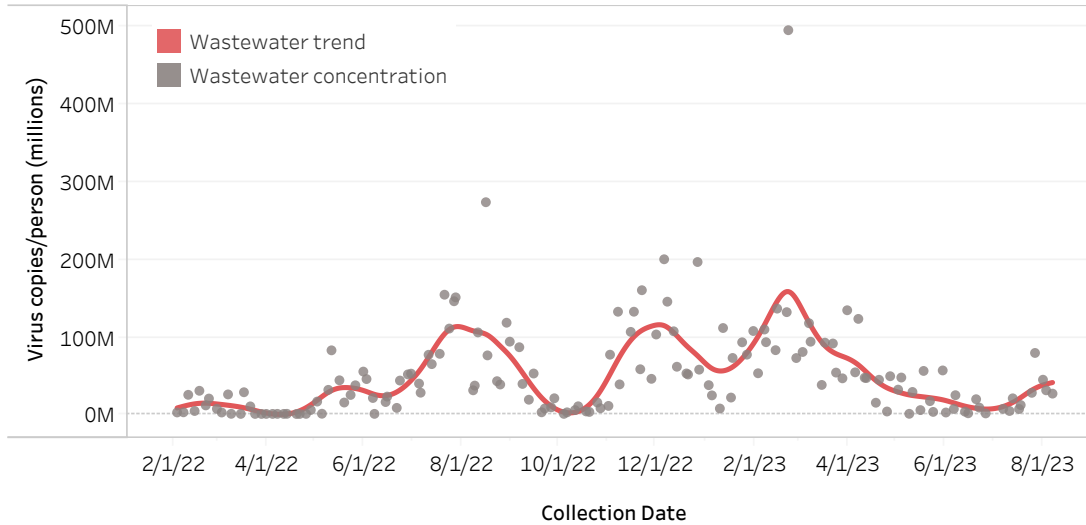
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Central Nebraska

### Hastings WWTP

Adams County (South Heartland District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



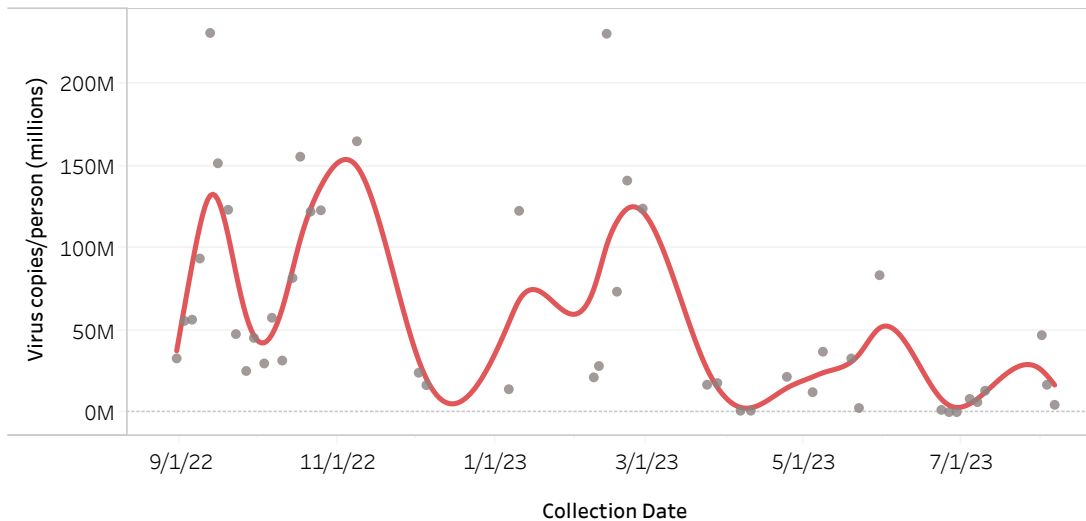
Current virus levels in wastewater  
Moderate  
on 8/7/23

15 day percent change  
Decreasing  
from 7/23/23 to 8/7/23

### O'Neil WWTP

Holt County (North Central District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater  
Very Low  
on 8/6/23

15 day percent change  
Decreasing  
from 7/22/23 to 8/6/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).

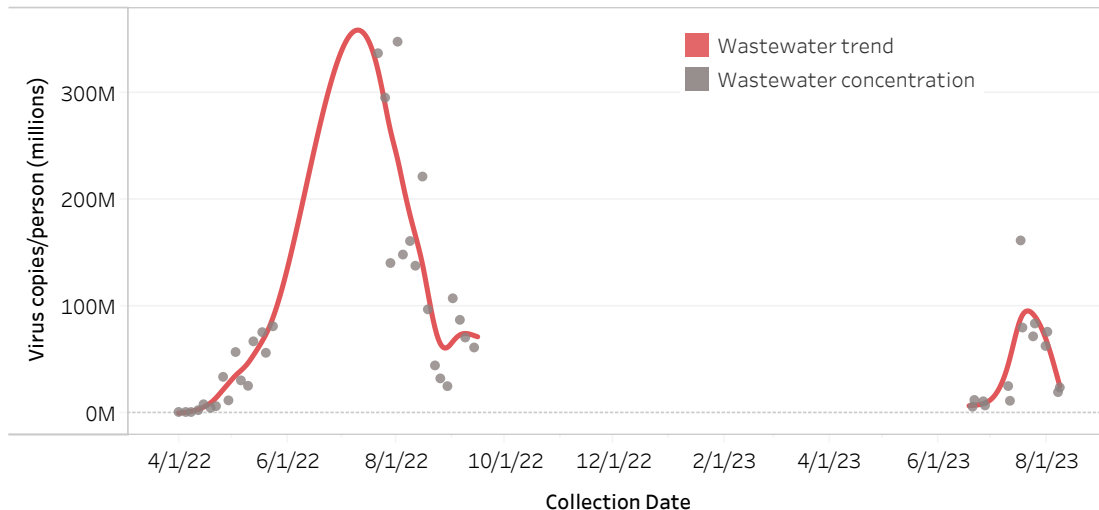
# Nebraska SARS-CoV-2 Wastewater Surveillance Report

## Western Nebraska

### North Platte WWTP

Lincoln County (West Central District Health Department)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater

Low  
on 8/8/23

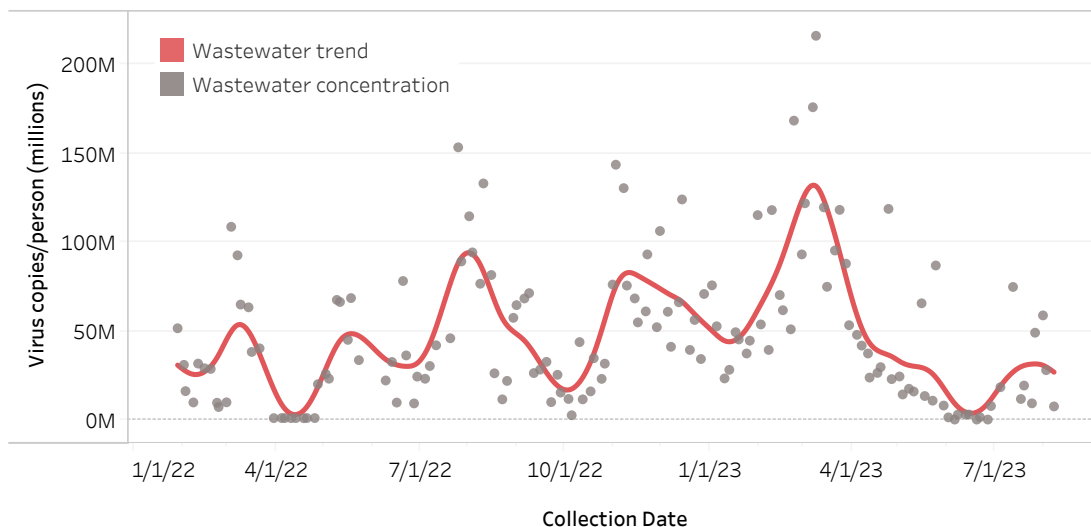
15 day percent change

Decreasing  
from 7/24/23 to 8/8/23

### Scottsbluff WWTP

Scotts Bluff County (Panhandle Public Health District)

#### SARS-CoV-2 Normalized Wastewater Concentration



Current virus levels in wastewater

Very Low  
on 8/7/23

15 day percent change

Decreasing  
from 7/23/23 to 8/7/23

#### About the Data

Data updated 8/17/2023. All data presented are preliminary and subject to change. WWTP=wastewater treatment plant; M=million.

The grey dots represent wastewater SARS-CoV-2 levels which are normalized to adjust by flow rate and population for each sample collection date. Wastewater levels shown in the red line are simple smoothing splines to help interpret trends over time. They do not indicate specific or actionable values. Percent change is the rate of change in virus levels over the past 15 days. Current virus levels show if levels are higher or lower than historical levels at same site.

For more information about wastewater data, visit: <https://dhhs.ne.gov/Pages/COVID-19-Genomics-and-Wastewater-Surveillance.aspx>

Data Source: Nebraska DHHS Wastewater Surveillance System (NeWSS).